

STATE OF MICHIGAN



JOHN ENGLER, Governor

**DEPARTMENT OF ENVIRONMENTAL QUALITY**

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REPLY TO:

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June 1, 2000

**IM-20**

TO: Storage Tank Owners/Operators and Interested Parties

FROM: Mohammad Yusaf, P.E., Support Section Chief, Storage Tank Division

SUBJECT: Repairs to Cathodically Protected Underground Storage Tank Systems

This informational memorandum is regarding repairs to cathodically protected underground storage tank (UST) systems. These UST systems are regulated by the Michigan Underground Storage Tank Rules (MUSTR), 1999 AACRS R 29.2101 et seq. A UST system that is in compliance with the December 22, 1998 requirements, can be repaired, restored, or improved to an equivalent or better level of protection. Note that a substandard UST cannot be repaired or upgraded after December 22, 1999, and must be permanently closed in accordance with Subpart G, Rule 53, Section 280.71, of the MUSTR.

**General Requirements**

Rule 11, Section 280.21(b)(2), states that a tank may be upgraded by cathodic protection if the cathodic protection system meets the requirements of Section 280.20(a)(2)(ii), (iii), and (iv) and all of the following provisions are complied with:

- (i) The integrity of the tank is ensured using one of the following methods:
  - (A) The tank has been installed for less than 10 years and has been monitored for the past 12 months for releases using one of the release detection methods specified in Section 280.43(d) to (h).
  - (B) The tank has been installed for less than ten years and is assessed for corrosion holes by conducting two tightness tests that meet the requirements of Section 280.43(c).
  - (C) The tank is internally inspected and assessed to ensure that the tank is structurally sound and free of internal corrosion and corrosion holes before installing the cathodic protection system. All personnel involved in the internal inspection related activities shall be qualified in accordance with

subdivision (1)(ii)(A) of this subsection and shall conduct the ultrasonic thickness gauging in accordance with subdivision (1)(ii)(B) to (G) of this subsection, with the average wall thickness established by averaging all the section thicknesses reported. A tank is eligible for upgrade by cathodic protection alone if the average wall thickness is not less than 75 percent of the original wall thickness specified in the UL 58 standard.

- (ii) The corrosion expert responsible for the design and the installation of the cathodic protection system shall provide the owner with a complete report of all of the results of any corrosion protection investigations, as well as the design, installation, and operational requirements of the cathodic protection system. The report shall be signed by the corrosion expert.
- (iii) All internally inspected tanks that meet the upgrading requirements by cathodic protection shall be provided with a ¼ inch thick steel striker plate which is not less than 8 inches by 8 inches and which is rolled to the contour of the tank and welded on all seams in a continuous manner under the fill tube.
- (iv) The owner/operator shall notify the department of all cathodic protection upgrades not less than 15 days before any work is performed, unless the department is notified of and approves an emergency repair. Notification of cathodic protection upgrade shall be on a form provided by the department. Cathodic protection upgrade shall be performed under the direct supervision and instruction of a corrosion expert.

### **Galvanic Systems**

When a UST system using galvanic cathodic protection does not meet the required protection levels (-0.85V) of the MUSTR, and a National Association of Corrosion Engineers International (NACE) corrosion expert determines that cathodic protection will be brought back to minimum potential standards by adding sacrificial anodes or an impressed current system, the following must be complied with:

1. An internal assessment of the UST system is not required as long as the owner/operator has the results and was in compliance with the last two 3-year inspections as required by Rule 15, 280.31(d)(2) of the MUSTR. This demonstrates that the UST system was in compliance with the December 22, 1998 requirements. If the last two 3-year inspections cannot be provided with the older test results showing compliance with the (-0.85V) criteria, then an internal assessment will be required per Rule 11, 280.21(b)(2)(i)(C) of the MUSTR.
2. The system must be designed by a corrosion expert and meet the requirements of Rule 11, Section 280.21(b)(2)(ii) of the MUSTR, and a 15-day notification must be filed with the STD in compliance with Rule 11, Section 280.21(b)(2)(iv), of the MUSTR.

### **Impressed Current Systems**

When a UST system which utilizes an impressed current cathodic protection system for corrosion protection does not meet the required protection levels (-0.85V) of the MUSTR, and a NACE corrosion expert determines that cathodic protection will be brought back to minimum potential standards by installing new anodes, the following must be complied with:

1. An assessment of the UST system is not required as long as the owner/operator has the results and was in compliance with the last two, three-year inspections as required by Rule 15, Section 280.31(d)(2) of the MUSTR, showing that the UST system was in compliance with the December 22, 1998 requirements. If the last two 3-year inspections cannot be provided with the older test results showing compliance with the (-0.85V) criteria, an internal assessment will be required.
2. The system must be designed by a corrosion expert and meet the requirements of Rule 11, Section 280.21(b)(2)(ii) of the MUSTR, and the 15-day notification must be filed with the Storage Tank Division (STD) in compliance with Rule 11, Section 280.21(b)(2)(iv) of the MUSTR.
3. General system maintenance of the impressed current cathodic protection system (i.e., replacement of a fuse) would not require to be designed by a corrosion expert. All records of maintenance and repairs must be kept at the facility for documentation during inspections.

This document is not intended to convey any rights to any parties, nor create any duties or responsibilities under law. This document and matters addressed herein are subject to revision.

If you have any additional questions concerning this matter, please contact the STD Technical Review Unit staff at 517-373-8168.

cc: Ms. Amy S. Carter, DEQ  
Ms. Andrea Zajac, DEQ  
STD District Supervisors